Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

UNITED STATES DEPARTMENT OF AGRICULTURE — Radio Service — OFFICE OF INFORMATION

1.9
1923
Ch
Cop. 2

LIBRARY
RECEIVED
NOV 22 1949
U. S. DEPARTMENT OF AGRICULTURE

CHATS WITH THE WEATHER MAN — Friday, Sept. 20, 1929.

NOT FOR PUBLICATION

ANNOUNCEMENT: Every other Friday we are going to have our old friend, who is a volunteer weather observer for the U. S. Weather Bureau, chat with us about the weather. All of us talk about the weather, but here is a man who knows something about it. He has been watching the skies and his thermometers and things for ---- I won't say how many years. --- Alright old Ob Server, what about the weather now? -------

******

The weather, some of you may have observed, is always first page news.

About this time of the year, however, it sometimes breaks out of that little box in the corner of the page and spreads itself into the big headlines. This is the open season for those West Indian hurricanes.

Every time one of those storms is reported starting up, some of my neighbors breeze in and storm me with such questions as "What is a hurricane? Where do they come from? -- Where do they go? How fast do they travel? --- And how can the Weather Bureau keep track of them, and warn the people they are coming?"

I used to have trouble answering some of the questions ----- to a considerable extent, hurricanes have passed me by. So I took myself and those questions to Mr. Charles L. Mitchell, one of the Weather Men at the main office. He has traced out the comings and goings of hurricanes. He has straightened out some of the twists in our knowledge of those big cyclonic storms.

That was quite a job, too. No two hurricanes are just exactly alike. Each takes a little different path. Some move faster and some move farther than others. Some are what you might call overgrown hurricanes and some are mere baby hurricanes --- some babies.

And, by the way, a West Indian hurricane, a Western Pacific typhoon and an Indian Ocean cyclone are the same sort of storm --- and that is a sort even the best of sailors will go a long way around to avoid. And when the hurricane hits land, it seems to have a way of looking up the buildings that are badly built.

Anyway, the Weather Bureau men say that few well-built buildings collapse and hurt folks; in case the hurricane comes their way; except possibly when the

hurricane is one of those rare record-beaters in intensity.

Nearly all the hurricanes that strike our Gulf and South Atlantic Coast and many more that miss us entirely are born either over the eastern Atlantic Ocean in the vicinity of the Cape Verde Islands or in the western Carribean Sea or the Gulf of Mexico. And they all come along from June to November, with September their favorite month.

Of course, that is because weather conditions are favorable for such storms getting through to our coast at this time. They start out over the warm, tropical sea, and, although each one takes a little different path, as a general rule, each moves westward or northwestward and then curves again and shoots northeastward.

Whether the hurricane plows across our landscape or detours this country altogether and heads out to sea depends on what is in the way.

Those of you who have seen these big storms root up trees and hurl down houses and seemingly pick up the sea and throw it at the land might think that nothing could stand in the way of a full-sized hurricane.

A small hurricane may make a path of damage from a few miles to 30 or 40 miles wide, while one of the bigger hurricanes spreads destruction by wind along a path from 50 to 100 miles or more, wide.

The hurricane itself, that is, the general movement of this big eddy of violent winds, is comparatively slow. The average hurricane advances along its route at the rate of about 15 miles an hour. The swirling winds which make up the hurricane however may be blowing at a rate of 100 or in extreme cases nearly 200 miles an hour.

But big and fierce as such storms are, they are mere whirling bubbles compared to the great air movements of the earth. And in making its path, the hurricane seeks the easiest way. The great areas of high air pressure, which we usually associate with clear, fine weather, serve as barriers.

Mr. Mitchell in tracing the paths of the hurricanes has found that the hurricanes always follow the troughs of low pressure. High pressure areas effectively block the progress of the storm. The hurricane finds its way out between the barriers of high pressure.

The particular path of any hurricane headed toward our coast depends on the position of and movement of these big areas of high pressure which block the road.

Often folks ask me how the Weather Bureau manages to forecast the appearance of a hurricane on our coast.

It is not always easy and the weather man has to know his hurricanes. Experience and knowledge of the past performances of hurricanes helps a lot. Then from the barometer readings from stations all over the continent, the Weather Bureau keeps track of the areas of high and low pressure, and charts their movements every day.

A glance of the weather map shows the experienced forecaster where the movement of the hurricane is likely to be blocked.

...is one of those rare record-centers in intensity.

...set the hurricane ... that spins our Gulf and South Atlantic
...that rises ... ly ... born either over the eastern Atla
...vicinity of the Cape Verde Islands or in the western Caribbe
...of Mexico. And stay all ... alone from June to November, w
...favorite month.

...ear, what is ... cause weather conditions are favorable for
...to our coast ... this time. They start out over
...ocean ... take a little different path, as
...ward or north ... ward ... curves again and ...

...plows across our landscape or destroys
...on what is in the way.

...to us who have seen trees ... storms root up trees and hurl
...violently pick up the sea and throw it to the land ... that this
...and in the very ... full-grown hurricane.

... may make ... of the ... from ... ile to
...wide, while ... of the bigger hurricanes spreads ... ition ... wi
...from 50 to ... miles or more, wide.

The hurricane itself. That is, the general movement of this ... cy
... ward ... is comparatively slow. The average hurricane advances
...rate ... rate of about 15 miles an hour. The swirling winds whic
...hurricane ... may be blowing at a rate of 100 or in extreme cas
... miles an hour.

... big and fierce as such storms ... are more whirling bub
...part ... the great air movement ... the ... in making its path.
hurricane seeks the easiest way. Th... ... high air pressure,
usually associate with clear, fine ... barriers.

... Mitchell in tracing the path ... hurricanes has found that
... always follow the troughs of ... pressure. ... pressure ...
...ly ... progress of the storm. The hurr... ... tinds its way
through the barriers of high pressure.

... particular path of any hurricane headed ... our coast depe...
position ... movement of the ... big areas of high pressure which block

... now ... Weather Bureau manages to forecast the
...

... easy and the weather man has to know his hurrica...
part... ... of the past performances of hurricanes, perhaps a lon...
from ... ... from records all over the country. The "...
Bermu... ... the area of ... ion pre... ... ports the
ports ...

... of the ... ap shows the experienced ... meteorologist ...
movement ... hurricane ... likely to be looked.

But I can hear some of you say, "How does he know there is a hurricane and which way it is moving?"

You have a good part of the answer to that question when you remember that a hurricane moves slowly. A hurricane advances along its path much slower than the ordinary automobile tourist. And in advancing from its birthplace in the Atlantic Ocean or the Carribean Sea, the hurricane must pass through a net-work of Weather Bureau stations and vessels at sea reporting to the Weather Bureau twice a day. A sudden drop in the barometer and a change in direction or an increase in the velocity of the wind may serve to show the location of the center of the storm. Later observations from other stations or vessels at known distances from the first often show the speed and direction at which the hurricane is traveling.

Through this vast net-work of stations, the Weather Bureau gathers the information, which makes possible the predicting of the path of these gigantic storms. Warnings are issued twelve to twenty-four or more hours ahead, which enable many to avoid destruction by the hurricane.

And that is just one service of the U. S. Weather Bureau.

******

ANNOUNCEMENT: Two weeks from this date, our friend Ob Server will be back to tell us more about the ways of the weather and the weather men.

###

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

LIBRARY RECEIVED NOV 22 1949 U.S. DEPARTMENT OF AGRICULTURE

1.9 In3Ch 2

CHATS WITH THE WEATHER MAN — Friday, October 4, 1929.

No. 2. Our Airways Weather Service

ANNOUNCEMENT: This is our Friday for a chat with the weather man. Every other Friday old Ob Server serves us something new about the weather, the world's oldest subject of conversation. His connection with the U.S. Weather Bureau helps him find out not only what is being said about the weather; but what is being done about it.

******

As an old observer, the thing that stirs me most is this new intensive weather service for airplanes. It is not only important for the high flyers, but is getting more and more important for us groundlings.

Mr. W. R. Gregg, who has charge of the aerological division of the U.S. Weather Bureau, has just been telling me about it. He says these forecasts for flyers are very different from the weather forecasts we've been used to. In this airway weather service observations are made every hour night and day. In fact, on some of the busier routes they are made every half hour. Then, too, the forecasts are for shorter periods and are more specific than the general forecasts made on observations taken twice a day could possibly be. Just think what we could do with short period forecasts in other lines than flying!

And these flying weather forecasts are not only intensive, they are getting to be quite extensive. We now have weather stations located on 20,000 miles of airways. There are 150 weather stations located directly on our main air routes. Reports are sent from one point to another by telephone, telegraph, or teletype printing machines. For instance, along one route, an observer at one point puts his report on the teletype at fifteen minutes past the hour. The other stations are all tied together in this system of communication, so all get the report. As soon as the first station's report is in, the next station starts writing its report on the teletype; and so on, in sequence until all have reported. The consolidated reports are then turned over to the Department of Commerce broadcasting stations and flashed out by voice radio, on frequencies which can be picked up by the airports and also by the pilots in the air.

The pilot guiding his plane with his earphones on his ears may be told by the reports that his terminal is fogged in so he can't land. He then listens for reports from a field where he can land.

Conditions on the fields are not the only things shown in the report. By means of pilot balloons, the observers, of course, determine the velocity and direction of the upper winds at different levels up to 12 or 13 thousand feet.

*****

It is plain that the rate the wind is blowing may make a lot of difference to an aviator. If it is with him, it may boost up his speed, but if it is against him it will cut down his speed and delay him.

Recently, a pilot flying from Cleveland to Chicago got a weather report showing high winds from the east at 10,000 feet. He went up there, caught the boosting wind, and made the distance in record time.

More important to the aviator than speed of winds, however, is the information contained in the weather report as to the ceiling or height of the clouds and visibility or the distance one can see in a horizontal direction.

With the aid of pilot balloons by day and a slanting beam from a searchlight by night, by triangulation the observers are able to calculate the height of the clouds very accurately.

Observations made directly on the air route are not enough for best forecasting. The forecasters must know what is coming from either side of the airway. For that reason, since the first of July, in addition to the 150 stations directly on the airways, 60 first rank stations have been established to form a network of reporting observatories on each side of our main transcontinental air lane. Those 60 stations report to Cleveland, Omaha, Salt Lake City, and San Francisco, from which points forecasts of weather conditions for the next three hours are made and broadcast for the benefit of aviators.

Those three hour forecasts can be more specific and more definite than the long period forecasts, and this network of stations on each side of the airway covers a strip across the country some three or 400 miles wide.

Now, there is where some of us groundlings are beginning to benefit. It seems that some auto clubs have already discovered that by merely equipping themselves with radio sets which can pick up the Department of Commerce broadcasts to flyers, they can get these fresher, more definite, intensive short-range forecasts.

Just think of it! --- Take a ball game, for instance. Folks often call up the weather man, and want to know what the weather is going to be for the ball game. At present, the forecaster in our regular service only has the observations made at 8 A.M. and 8 P.M. He may be able to say from the reports of the conditions at 8 o'clock in the morning, that there will probably be showers in the afternoon; but whether the rain will come before or after the game, it might be impossible for him to say. However, with observations every hour, as they are made in the airway service, he would be in much better position to say just when the expected storm was due to show up. In fact, in a thousand and one activities, the importance of more definite weather information can be readily seen.

But that is getting off our airways. I just mentioned that in passing. As an old observer, that airway idea of specific forecasts from frequent observations day and night sort of facinates me. And this airplane business is just getting off to a good start!

Of course, as Mr. Gregg mentioned to me, for the airplane to take its rightful place in transportation, it must move day and night! To make night travel safer and more practical the airways are being lighted, 7,500 out of 20,000 miles of main routes are now marked with beacon lights; intermediate landing fields are being established; and radio beacons are being used to guide the planes under poor conditions of visibility. These great services are being performed by the U.S. Department of Commerce, but even more essential to night flying is this already great system of intensive weather observations and forecasts made by my old boss, the U. S. Weather Bureau, in cooperation with the Department of Commerce.

****

ANNOUNCEMENT: Friday after next, old Ob Server will be with us again. "Whether it rain or whether it snow, we'll have weather, whether or no."

###

******

UNITED STATES DEPARTMENT OF AGRICULTURE — Radio Service — OFFICE OF INFORMATION

1.9
In3Cn
cop.2

LIBRARY RECEIVED NOV 22 1949 U.S. DEPARTMENT OF AGRICULTURE

CHATS WITH THE WEATHER MAN: Friday, October 18, 1929.

SPEAKING TIME: 9 minutes

Chat No. 3: The Sun, As It Strikes Us.

ANNOUNCEMENT: Every other Friday our old Ob Server serves us something new about the weather. Circulating around among the scientists at the United States Weather Bureau, he has picked up the latest developments in weather study. Today he has promised to tell us about his talk with Dr. Herbert H. Kimball, in charge of the solar radiation investigations of the Weather Bureau and chairman of the International Solar Radiation Commission.

****

To get new light on the weather, naturally I went to Dr. Herbert H. Kimball. He measures the light and heat we get from the sun. It is part of his work also to find out what's in the air.

The sun's light and heat filters in to us through the air. Some of it is absorbed in the air and some of it is reflected back into space. Dr. Kimball is trying to find out how much heat and light this old earth gets from the sun, and what it does with it.

Of course, we all realize, sometimes in a smoky city we don't get our full share of sunlight, including those healthful ultra-violet rays we hear so much about. The little particles of dust, sulphus, and so forth that fill the air block the light.

Measurements made at the University of Chicago about this time of the year, showed that on a smoky day, the light that filtered through for use by the Chicago people is only 15 per cent of what it is on a clear day.

In his work Doctor Kimball has collected sun measurements from about 150 stations, located in all parts of the world, and representing every continent except Australia. In the United States the measurements come from New York, Chicago, Madison, Wis., Lincoln, Nebr., Twin Fall, Idaho, Fresno and La Jolla, Calif., and Washington, D. C. Most of the 150 stations measure the intensity of the heat received in the direct rays of the sun, but about 30 stations include in their measurements the sunbeams that have been scattered by the atmosphere as they passed through it, and reach the earth as sky light. The measurements give the intensity of the heat in sunshine. It is expressed as the amount received on a square centimeter of surface in a minute, or in an hour, or in a day.

The intensity of the light furnished by the sun, and which we call daylight, or natural light, has also been measured, including that part received from the sky. This latter is really the important part, since it is only the light from the sky that is generally admitted to our houses, and is the total daylight

[illegible] [illegible] [illegible] [

in cloudy weather.

From those measurements, the Weather Bureau has been able to work out standards which architects in this country now use in planning the size of windows and sky-lights in buildings. Studies are also made of the quality of the light, for use by illumination engineers. In order to match natural light, it is important to know what is the average color of light. We know, of course, that the sky is blue. But how blue?

These are some of the practical ways measurements of the sun's light are being used. Naturally, the amount of heat falling on the earth is very important in farming. Often, our Weather Bureau is called upon by those interested in finding if there is enough heat available in certain localities for certain crops.

The Russian government has also done extensive work in measuring the sun's rays and their effect on crops, especially in their great wheat lands.

But not all the sun's rays striking the earth are available for use here. Some of them are lost by being reflected right back into space.

The International Solar Radiation Commission meeting at Prague a few years back decided it was so important to know how much is lost by reflection, they had instruments built to be used in an airplane to measure the rays reflected back from the earth.

One instrument was sent to Italy, one to Great Britain, one to France, and one to the United States. The instrument was built so that an observer in the airplane could compare the brightness of light reflected from the ground and that coming from the sky. One window of the instrument pointed up to the sky above the plane and the other window pointed down to the ground below.

With that instrument, Mr. Hand, Dr. Kimball's assistant flew over the Blue Ridge Mountains, and the coastal plane, and twenty miles out to sea, so as to measure how much light was lost from different kinds of surfaces. By the use of red and green and blue screens, it was also possible to measure the quality of the light reflected from seas, and rivers, and forests and plowed ground.

In flying over plowed ground, it was found that 12 per cent of the radiation was reflected back from sandy soil as compared to 6 or 7 per cent from dark, loamy soil.

These solar radiation studies are in their infancy, but it is easy to see that they already have many practical applications. But some of the things, I've mentioned are mere side issues compared to what you might call the main question.

All our weather, even cold weather, depends on the rays of the sun. The sun is really the engine which drives our winds. When the air gets warm, it rises. Then cold air rushes in to take its place. In other words, the very first effect of the sun's heat is to set the air in motion. There is an exchange of warm and cold air going on constantly between the equator and the poles.

So you see, these cold waves are really started by the sun's heat. If our old earth were perfectly smooth, the exchange of air between the poles and the equator would be very regular. Forecasting a cold spell might be much simpler than it is.

However, the earth is not smooth; and all its irregularities and different kinds of surfaces help keep the weather man figuring. Anyway, as the sun's heat is the basis of all our weather changes, you can see that the weather men need heat measurements in solving their fundamental problems.

In the meantime, the sun's rays keep on striking all of us in a lot of ways we never think about. And the health promoting rays from the sun we keep from striking us, by filling the air with billions of solid smoke particles. Dr. Kimball and other meterologists have sampled the air and calculated the number of those particles. They have measured the effect such sooty air has in cutting down our sunlight in winter. They even suggest that much of that smoke could easily be stopped. But that's getting away from the weather—

ANNOUNCEMENT: Friday two weeks from today, old Ob Server will bring us some more observations on the weather. "Whether it's cold,or whether it's hot, we'll have weather, whether or not."

****

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

1.9
In 3 Ch
cop. 2

LIBRARY
RECEIVED
NOV 22 1949
U.S. DEPARTMENT OF AGRICULTURE

CHATS WITH THE WEATHER MAN

Friday, November 1, 1929

NOT FOR PUBLICATION

ANNOUNCEMENT: Every other Friday, old Ob. Server tells us something new about the weather and the weather men. He has inside information. He has talked with the weather-wise men of the U. S. Weather Bureau. He knows what they are doing to help the rest of us take advantage of the best weather and dodge the effects of the worst weather.---All right, Ob Server, what's new now?

*****

Swapping weather talk with the neighbors, I find what is new to some folks is old to others. And what is old to some of us, is fresh as a bright November morning to others. Shipping forecasts are a case in point.

About this time of the year, when I begin to drop casual remarks about the shipping forecasts, some fellow, who is not a shipper, speaks up and wants to know, "What are shipping forecasts?"

Weather Bureau stations have been making shipping forecasts for twenty years or more now. True, they never attracted much attention until the World War and the big move to conserve all foodstuffs. The big shippers and railroads began to make more regular use of them then.

Nowadays, Mr. Montrose W. Hayes of the U. S. Weather Bureau tells me, there is no perishable produce shipped by rail from the big shipping centers except on shippers' forecasts. Mr. Hayes is the new man in charge of the River and Flood Division of the Weather Bureau, but for years he was at the St. Louis station, where among other things, he had much to do with the development of weather forecast service to shippers there.

Shipping forecasts are issued during the winter in all parts of the United States when the temperature is expected to be freezing or lower. These forecasts show the temperatures which may be encountered by freight trains within the next twenty-four hours. They are made to cover the distance an ordinary freight train will travel in twenty-four hours.

They read something like this: "Protect shipments northbound against temperatures of zero to twenty below, eastbound ten to fifteen, south between fifteen to twenty, and west zero to ten below."

The forecasters use the same regular daily weather map, made up from observations taken all over the country, which they use in making the ordinary weather forecasts with which we are all familiar. In making the shipping forecasts, however, shippers are warned against temperatures a little lower than those expected to show on the thermometers at the Weather Bureau stations. That is because freight trains moving along valleys and standing in exposed open country, are apt to meet colder air than that at the regular Weather stations.

*****

Every thing we eat of a perishable nature which moves in winter is protected by these forecasts, which form one of the most important services of the U. S. Weather Bureau in winter time.

Of course, they are of the biggest benefit and are issued to a greater extent in regions where there is a fluctuation in temperature from well above to considerably below freezing.

As shipping by ordinary freight car is cheaper than in insulated or by heated cars, shippers want to know when they can ship by ordinary freight car. Railroads, on the other hand, will not accept shipments of perishables for ordinary freight cars if a temperature below a certain limit they have set is forecast.

At the forecasting station several men are often kept busy answering calls for the forecast from shippers and railroads. The short, pithy predictions of temperatures to the north, east, south, and west are soon given. The forecasts are wired out each morning over ordinary commercial lines at the regular rates, and the railroads and shippers pay the toll.

But these forecasts often enable them to make big savings. By preventing heavy and sudden losses, they have a tendency to keep produce prices more even.

It is easy to see the value of such information in the case of apples and oranges and other fruits and vegetables. Also for shipments of mineral waters, and inks, and muscilages. But Mr. Hayes tells me that one of the big uses of these forecasts is in shipping iron ore, and gravel, and sand.

Folks who have never had any experience with such shipments in cold weather might think that sort of queer. Not long ago, however, a company loaded some open cars with sand and gravel when the lowest temperature was 48 degrees. Then they got a shipping forecast of a thirty degree drop. Instead of letting the shipment go ahead, they ordered the cars dumped and waited for warmer weather. The sand and gravel goes in the cars wet. It might freeze solid in the cars and not only tie up the material for several weeks but also tie up the cars all that time. Either that, or the expense of thawing it out by steam.

The same is true in the case of shipments or iron and other ores. So you see, it is not only the perishable produce which is protected by these forecasts. Then there are the coal dealers. Naturally, they want to know when it is going to be cold. Retail coal dealers are often largely guided in placing orders with the mines, and wholesalers and brokers by Weather Bureau forecasts. And, of course, many florists make use of weather information in shipping flowers.

This time of the year, here for the next few weeks, is the time shipping forecasts are most in demand. All winter in most of the big shipping centers, however, there will be thousands of calls for this special forecast service which has been developed by the Weather Bureau. And, of course, the other end of the thermometer is of interest to summer shippers of perishables.

To ship or not ship in refrigerator cars? To ice or not to ice the cars? are very practical money questions with some kinds of produce in the summer. Shippers and railroads often read the answer from these shipping forecasts which now are rated as one of the most valuable of the many valuable services performed

by the United States Weather Bureau.

ANNOUNCEMENT: Our Ob. Server will again chat with Station _____'s audience two weeks from today. We have had weather for a long time now. But it is such a changeable subject, the U. S. Weather Bureau men seem to be kept pretty busy keeping ahead of the changes.

######

UNITED STATES DEPARTMENT OF AGRICULTURE — Radio Service — OFFICE OF INFORMATION

RECEIVED NOV 22 1929 U.S. DEPARTMENT OF AGRICULTURE

1.9 In3Ch Cop.2

CHATS WITH THE WEATHER MAN. Friday, November 15, 1929.

ANNOUNCEMENT: Every other Friday, our old friend Ob. Server, has been chatting with us about his chats with the scientists at the United States Weather Bureau. He has shown us some of the latest developments in that ever fresh subject of the weather. Today he tells me he is going to talk about clouds --- What's new in clouds, Mr. Ob. Server? -----

*****

There is a movement on foot in this country and abroad to make clouds more useful. Dr. W. J. Humphreys, meteorclogical physicist of the U.S. Weather Bureau, told me about it.

Of course, you know, clouds are one of the aids in weather forecasting. The aim now is to make them better aids, by setting up standards for classing the clouds.

When I was a boy, we used to say the clouds took on the shape of the things over which they passed. Anyway, there seemed to be no end to the variety of changes, as you watched them. Like Shakespeare's Hamlet, I've seen a cloud that looked like a camel, a weasel, and a whale all at once. I never thought in those days there could be such a thing as a classification of clouds.

Since then I've found that weather men do group most clouds in a few main types. That is for handy reference in reporting the weather.

But such labeling and naming of clouds is comparatively new. All through classical times, clouds drifted by without being tagged. About 1790, a Frenchman found that for identification purposes he could group most clouds under a few main heads. But he gave those classes French names. Those names didn't stick to clouds passing over Germany and England and other countries.

Then in 1803, Luke Howard, an English Quaker druggist gave the main kinds of clouds latin names. Latin being the Esperanto of those times, as Dr. Humphreys says, the names stuck. That classification furnished the basis for the classification of clouds now being used by the leading weather services of the world.

Luke called those thread-like, wispy clouds you often see on an otherwise clear day, Cirrus clouds. Those which spread out in layers, he called Stratus. Those beautiful heaped-up, wooly clouds he called Cumulus. And rainy clouds he called Nimbus.

That was a little too simple for practical use. Many clouds are a mixture of those kinds; so later meteorologists combined some of

Druggist Howard's names and made the more complete classification used today. Thin fibrous clouds over the sky like a layer, they called Cirro-Stratus. Very high wispy clouds making a lumpy or curdled sky, they called Cirro-Cumulus. The small heaped-up or wool-pack clouds high up in the air from which rain doesn't fall, they labeled Alto-Cumulus. A sheet of fairly dense clouds through which you could still see the sun, they named Alto-Stratus. They reserved Luke Howard's name of Stratus for the low sheet of clouds. These heaped-up thunder storm clouds, they called Cumulo-nimbus.

Of course, you all know, a cloud is just a fog in the sky; or, a fog is a cloud on the ground. There is no real difference, although there is a little difference in causes. The fog is usually caused by the mixing of warm and cool air where the fog is, or by the surface air cooling where it is. The cloud is formed by warmer air going up and cooling by expansion as it ascends.

However, the particular type or kind of cloud you have at any time depends on its position with reference to a storm or to general weather conditions. So you can readily see how important clouds may be in weather forecasting.

For instance, if cloud is only being formed high up, you don't expect rain or snow right away. If a cloud of another sort is formed, say a cirrus cloud, followed by lower and denser clouds you may look for a change in the next several hours. Clouds help show the quantity of water in the air and the temperature and kind of movement of the air.

To the forecaster, the clouds are just bits of circumstantial evidence. He does not make his forecast from reports of clouds alone. Temperature, and pressure, and wind velocities and directions, and cloud forms are all checked one with the other, they are all aids or evidence pointing one way or the other. The weather detective pieces together these bits of circumstantial evidence and from them makes his forecast.

But the reports he uses generally come from a number of different observers. As with other witnesses, they don't always see the same. They do not all know cloud types equally well. Relying on his memory for the differences, the observer may mistake the proper classification.

Dr. Humphreys and other meteorologists, both here and in Europe, now propose to make cloud reports more accurate by equipping all observers everywhere with duplicates of the same series of pictures of the different classes of clouds. The observer will then be able to look at the clouds, then at the series of cloud pictures in a book or on a card in his hand, compare them, and pick out the picture of clouds which looks nearest like the cloud-scape he sees. Each picture will have a definite number or code symbol. The weather observer will include that code number or letter in the report which he wires to the central weather office. At the weather office, the translator will look that number up on his duplicate series of pictures, or most likely remember it, and so place before the forecaster a more accurate idea of what the observer has really seen. In other words, there will be a set of standards for the different types of clouds, now merely reported by name.

That is just another little wrinkle by which weather forecasting may be made even more accurate than it now is.

The type of clouds is not the only thing reported, however. The direction and velocity at which clouds move furnish evidence of the movement and velocity of the winds in the upper air. But all clouds do not drift. Some clouds don't change their position. Lens shaped clouds hang suspended in one position, for instance. And around mountain tops the air rising up the mountain side often forms clouds that just hang or rest on the mountain, continuously forming on one side and evaporating on the other.

In fact, in some places queer stationary clouds are formed which are distinctive in that locality. The best known cloud in the world is probably the cloud which spreads like a table-cloth over Table Mountain, near Cape Town, South Africa.

The main point about clouds however, is that our weather scientists are looking forward for new ways to increase the efficiency of our daily weather forecasts. As the poet says:

"Nothing that is can pause or stay;
The moon will wax, the moon will wane,
The mist and cloud will turn to rain,
The rain to mist or cloud again,
Tomorrow be today."

###

ANNOUNCEMENT: Our Ob. Server has just told you about what is on the horizon for clouds. Friday after next, he will be back to tell Station____'s audience of other advances in the work of the U.S. Weather Bureau.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

LIBRARY RECEIVED NOV 22 1949 U.S. DEPARTMENT OF AGRICULTURE

1.9
I 23Ch
Cop. 2

CHATS WITH THE WEATHER MAN. Friday, November 29, 1929

ANNOUNCEMENT: Every other Friday our friend Ob. Server, has been chatting with us about his chats with the scientists at the United States Weather Bureau. Now that winter is right at hand maybe he can give us some warm facts on that cold subject. At least, he might tell us a warm place to land for the winter. -----Well, Mr. Ob Server?

*****

In this country, we usually think about going South for warm weather and North for cold weather; especially at this time of the year. But you'd be surprised at the contradictions you run into when you try to measure degrees of temperature strictly according to degrees of latitude. At least, I was when Dr. W. J. Humphreys, meterological physicist at the U. S. Weather Bureau, pointed out to me a few of the high spots in temperature and geography.

We ordinarily think of Alaska as cold and the Tropics as hot. They both are all of that. Yet, the interior of Alaska has more days during the year with a temperature of 90 degrees or over than Panama has.

Before I could quite make that out, Dr. Humphreys declared. "We ordinarily think of St. Louis, Missouri, as being fairly warm; but the average temperature of St. Louis in January is the same as that of southern Iceland. That is not that St. Louis is so frigid; but that southern Iceland is not such a bad place as a winter resort as some people might think.

"The Scilly Islands off the coast of England," Dr. Humphreys went on, "are covered with tropical vegetation which would be killed by the slightest frost. Yet those islands are in the same latitude as northern Newfoundland, where it gets quite cold, and Medicine Hat, Saskachewan, famous for its low temperatures and the place from which our cold waves come.

"Or take Rome," he suggested. "We usually think of Rome as pleasant and balmy, yet it is in the same latitude as Chicago and Council Bluffs which have acquired quite a reputation for being blustry and cold.

Then Dr. Humphreys switched to another viewpoint on our temperatures. "In southern California," he said, "within a few miles of where they have the highest temperature ever recorded in America, and next to the highest ever recorded anywhere, 134 degrees in the shade, the snow never melts.

"In that region, we have snows thirty feet deep, the deepest snows on the North American continent. Yet just a few miles away is the place which has been known to go for a whole year with no snow and not a drop of rain."

Of course, that one was easy. That snow is in the mountains. Those differences of temperature just illustrated what we get when we take in a

third dimension, and figure this thing from the standpoint of altitude.

As Dr. Humphreys said, these apparent paradoxes in temperatures are not any mysterious freaks, but are easily explained when you stop to think. When he mentioned that the average winter temperature of Sitka, Alaska, is practically the same as that of Washington, D. C., I began to see why some of these northern places have comparatively warm weather. In the case of Sitka, the winds from the Pacific ocean and its warm Japanese current account for it being comparatively warm along southwest Alaskan coast. And our Gulf Stream which swings north and east in the Atlantic ocean and warms those Scilly Isles off the coast of England. In fact, these surprisingly high temperatures in what we ordinarily think of as cold latitudes are in marine climates. Rome is warmed by winds from the Mediterranean Sea.

On the other hand, such places as Washington, D. C. and St. Louis, Missouri, get their winter winds from the north, from the high latitudes. As Dr. Humphreys put it, in the case of the seas, the colder water sinks, and the warmer water rises; but land can't sink. It just gets colder and colder.

Most of our big cold waves come to us over land from the McKenzie Valley, in northern Canada, and sweep down the Mississippi Valley. Any modifying effects from the oceans are blocked off by the mountains. For that reason, the interior of our country is colder than many other countries in higher latitudes, but so situated as to give access to the winds modified by blowing over stretches of water.

On the other hand, the prevailing on shore winds tend to modify our climate somewhat along the Atlantic Coast.

But water not only tends to stay warmer than the land, but in summer and in low latitudes it tends to keep cooler. Ocean water can't get very warm; for the very simple reason that it evaporates. And, as Dr. Humphreys says, land can't evaporate. It just gets hotter and hotter.

That is what happens in the interior of Alaska in the summer when the ice is gone, the surface gets hot and hotter. Then when you figure that the sun shines nearly the whole 24 hours in Alaska whereas in Panama the sun never shines much over 12 hours, you begin to see why it is the interior of Alaska averages more days during the year with a temperature over 90 than does the marine climate of Panama.

But it doesn't take an ocean full of water to modify temperatures enough to have considerable practical effect. For instance, peaches and other fruit may be more successfully grown on the eastern shore of Lake Michigan than on the western shore. The winds crossing the water from the west are slightly warmed and made more humid.

Some of these surprising differences in temperature in different places suggested to me to ask Dr. Humphreys about the differences in winters, and whether our climate is changing. I had my own views about it, but I just wanted to get word from some recognized authority on such things. Some of the older fellows in our neighborhood insist that we

don't have winters like we used to have.

Dr. Humphreys didn't seem to think there was much to such notions. Of course, he said, there are no two years alike. We may have a period of two, three, or four years of mild winters. Or we may have periods of severe winters. We may have a difference of five or six degrees between one winter and another. That is a big difference in the way we feel about it. However, if we take any period of twenty consecutive years, Dr. Humphreys says, and compare it with any other period of twenty consecutive years, we will find that the average temperature is just about the same. Changes in our climate are mostly in the minds of the folks who say we don't have winters like we used to have. The records offer them little support.

***

ANNOUNCEMENT: Every other Friday Station_____ presents these Chats with the Weather Man. Friday after next, our Ob Server will bring us more weather facts from his talks with scientists of the U.S. Weather Bureau.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

LIBRARY
RECEIVED
NOV 22 1949
U.S. DEPARTMENT OF AGRICULTURE

1.9
In3Ch
cop. 2

CHATS WITH THE WEATHER MAN

Friday, December 13, 1929.

ANNOUNCEMENT: Here comes something new about the weather!-- at least something new in finding out more about the weather.--Every other Friday, our old friend Ob. Server gives us the results of his chats with the officials of the United States Weather Bureau. From what he says, our forecast service seems to be moving ahead, as well as looking ahead--- Tell us about it, Mr. Ob. Server----

****

As you know, radio is playing a big part in weather work these days. Mr. E. B. Calvert, chief of the forecast division of the United States Weather Bureau, says that radio has done more for the development of meteorology in the past twenty-five years than any one thing.

As he explains, the issuance of weather forecasts depends on getting immediate weather reports, from extensive areas; especially to the westward of the place to which the forecast applies.

There was no great trouble getting such observations from land areas that were more or less inhabited, and where there were telegraph facilities. But, as Mr. Calvert puts it oceans and remote land areas have weather the same as inhabited parts of the earth. Storms form and move over them in the same way. In fact, in many cases the storms which affect our inhabited regions form over the ocean or in isolated sections, especially toward the poles.

Prior to the development of radio, it was impossible to get current observations from the oceans and remote regions, because there were no communication facilities. Radio has changed all that. Although Mr. Calvert says that observations from the oceans and isolated regions are not being obtained in the quantity fully needed, every year marks an improvement. It is the dream of meteologists that eventually we will have reports of weather conditions in all parts of the earth, oceans and land areas alike, in as big quantities and as fast as we can now get them from inhabited land areas.

Even now radio plays an important part in getting the observations from Alaska and northern Canada. Nearly all of the observations made in United States territory of Alaska are transmitted by radio to the cable centers and the Canadian observations in the McKenzie Valley and Hudson Bay and other remote regions go by radio to the nearest telegraph offices where they are sent to the United States Weather Bureau at Washington and the Canadian Meterological Service headquarters at Toronto. There is no boundary line between Canada and the United States as far as weather is concerned. There is complete cooperation between the weather services of the two countries.

But it is in reports from ships at sea that radio is used to the greatest extent. More than three hundred ships are now engaged in taking weather observations and in transmitting those observations to our forecast centers at Washington and San Francisco.

These ship reports give the forecaster at San Francisco information vital to forecasts for our western States. You can see how important are those ship radio reports, when you recall that owing to the rotation of the earth, storms move from west to east. Without those ship reports, a storm from the Pacific would strike the coast stations before its existence became known. Now with the ship reports by radio most storms are discovered and their courses followed from 24 to 48 hours before the western States are affected by them.

In a similar way, the hurricanes which form east of the Bahamas and Lesser Antilles, and first move westward, an exceptional characteristic of hurricanes, are, in most cases, first detected by observations from ships. During the hurricane season, the Weather Bureau gets anaverage of about 60 reports twice a day from ships in thoseareas.

And while observations from the northern part of the Atlantic on the ship lanes between Europe and America are more important to the European countries than to the United States, they have a tremendous value to our own forecasters; because storms which have passed, often have had a great influence on the pressure areas behind them. Then too, the need for reports from these ship lanes have increased, due to the development in aviation of trans-oceanic flights. Aviators engaged in these enterprises, expect information from the Weather Bureau as to the weather conditions they will experience the whole distance across.

Moreover, merchant and passenger ships are much concerned with north Atlantic weather and every day need full information and forecasts.

Congress granted appropriations to the United States Weather Bureau to extent its North Atlantic service, and the first of July of this year the Weather Bureau arranged with twenty of our passenger ships which have long range radio equipment to send twice a day weather observations during their voyages.

Under the arrangement made, Mr. Calvert, says, these ships will transmit their observations direct to this country when west of Longitude 35 and to Europe when East of 35.

When received in Europe, the observations will immediately be broadcast for the benefit of European meterological services and also transmitted to the United States.

Similarly, English, French, and German ships will send observations to their own countries when east of Longitude 35 and to the United States Weather Bureau at Washington when west of that line. These observations will then be re-transmitted to Europe for use of the European services. Some of the details are still in process of being worked out, but by next spring, the full arrangement for the exchange will be affected.

As the chief of our forecast divisions says, meteorology is essentially international in scope. Weather disturbances which affect one country today, may affect another a week hence. For that reason, there must be the closest cooperation of the weather services of the world to insure the exchange of information so vital to all.

But such international cooperation naturally brings up many questions which must be settled. For instance, there must be uniformity in the hours and the character of the reports, and a medium of communication must be arranged to give

the data in brief form so as to be practical for use by all the nations concerned.

Each of the Nations of the world uses a code for the collecting of its own reports. That is not for secrecy, but for economy in sending the reports. Many codes are used. Shipmasters, however, are interested in reports from other ships than those belonging to their own nation. It is often hard for them to decode such reports, because so many different codes are used. The international meterological organization composed of directors of various weather services of the world meets every few years to iron out such differences. One of those meetings was held in Copenhagen last September which Mr. Calvert attended.

One of the important matters taken up was the question of devising a uniform code to be used by ships regardless of nationality. This country has been using a word code and so have some other nations. But most of them use a numerical code. It is obvious that a word code for all the nations would be impractical. Aside from any questions of national pride, no language is sufficient for the purpose. However, there is one language that is common to all; that is the figures zero to nine inclusive. Those figures are in universal use.

That being the case, a numerical code for international purposes was agreed to, by the representatives of the varicus nations including our own. The weather Bureau will continue to use its word code for its domestic work. Weather reports sent by radio from ships of all the nations involved will be in the same numerical language, equally understandable by all. The new universal weather code will go into effect early next year.

******

ANNOUNCEMENT: You have just heard about the new international system of ship radio reports of weather conditions at sea as outlined to our Ob. Server by Mr. E. B. Calvert, chief of the forecast division of the United States Weather Bureau. This is one of a series of chats with the weather man presented by this Station---in cooperation with the United States Department of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

29

LIBRARY
RECEIVED
NOV 22 1949
U.S. DEPARTMENT OF AGRICULTURE

1.9
In3Ch
Cop2

CHATS WITH THE WEATHER MAN Friday, December 27, 1929.

ANNOUNCEMENT: Every other Friday, our old friend Ob. Server has been chatting with us about his chats with the officials at the United States Weather Bureau. A couple of weeks ago, he told us something about how the nations of the world work together on the weather. Today he is going to tell us something more about that work.--------Well, Mr. Ob Server?

*****

A few months ago, when the "Graff Zeppelin" flew around the world, her weather expert had to carry 28 different code books so he could translate the weather reports from the different nations. Even then, he wasn't fully equipped. He would have had to have 35 different weather codes in his airship library to have received all the weather reports available. And while he was trying to figure out the strange weather language his airship might have been steadily nosing her way into trouble without his knowing it.

Of course, airships don't fly around the world every day. But every day the men "who go down to the sea in ships" face that same problem. If they pick up weather reports from other nations than their own, they often find the vital facts about some approaching storm concealed in a strange code.

This coming year, however, that kind of thing is going to be done away with. The babble of unknown weather tongues is soon to cease. Mr. E. B. Calvert, chief of the forecast division of the United States Weather Bureau and representative of this country at the recent meeting of the International Meterological Organization at Copenhagen, says that next year every national weather service in the world will use the same weather code, giving the same information in the same form understandable to all alike. This will be a big boom to ships on all the seven seas, and is among the very important results of the close cooperation among the world's weather services.

Nations have to agree on the weather. Weather does not confine itself within national boundaries. Few countries of the world could operate an effective weather forecasting service, Mr. Calvert tells me, by depending entirely on reports from their own territory.

In that respect, the United States is more favorably situated than any other;; but we would have a hard time getting satisfactory weather service with only the observations we could get within our own boundaries.

In weather forecasting, we need accurate reports of conditions over wide areas, especially to the westward. With our country extending east and west about 3,000 miles and north and south about 1,200 miles, our Weather Bureau might be able to make forecasts of a sort for the central and eastern half of the country. But even so, our forecasters would be tremendously

*****

handicapped without observations from Canada and from the islands belonging to other nations located in the southern part of the Atlantic and in the Caribbean Sea. The weather reports from the West Indies are especially important in giving warning of hurricanes.

And, of course, we can all readily see the fix Europe would be in - without international cooperation in weather reporting - when we compare the small areas of many of the European countries with the rapidity of movement of high and low pressure areas which accompany variations in the weather. A storm in Europe may affect several nations within a few hours. So it is highly important that each nation get reports of what is coming before it strikes the borders. But as soon as you get to exchanging reports between different nations, you run into questions of how the reports are to be made; the kind of information needed, uniformity in reports, fixing schedules so all can get the reports with the least delay and confusion, and the like.

Well, the world's leading weather experts recognized the difficulties years ago. Back in 1878, the International Meteorological Organization, made up of directors of the leading national meteorological services of the world, was formed to take care of such obstacles. Those directors met every six years to discuss the problems and work out ways of being helpful one to the other.

There was no force of government authority behind the findings of the Organization. Membership was purely voluntary and designed to advance science and the service of meteorology. None of the cooperating nations were bound to observe any of the regulations made or adopt any of the conclusions reached at these conferences. The conclusions were "gentlemen's agreements" by which all abided as far as was practical.

Well, that Organization working on the principle of helping each other has now lasted for more than fifty years. But instead of the few nations in at the beginning, there are now about forty of them. Meeting once every six years, the Organization could not keep pace with the changes of codes, and the new results of investigations, and other developments. So a number of commissions were formed to keep track of various phases of weather work and to recommend action when action was needed. And an executive committee was selected from the directors of the most active of the world's weather services to pass upon the recommendations from the various commissions and to look after the details of getting cooperation between the different nations during the intervals between the meeting of the main Organization.

Ordinarily, this International Meteorological Committee meets every three years. It met once in Washington and once in Toronto, Canada, but as a rule it meets in Europe. In the meantime, however, the sub-commissions of the main International Meteorological meet as often as need be, usually every one or two years. There are now ten of those commissions. One keeps up with the developments in magnetism and atmospheric electricity. Another takes care of the developments in solar radiation study as they affect weather work. A third commission concerns itself with the international exploration of our upper air. A fourth devotes itself to marine meteorology.

A fifth to the coordination of weather observations and codes. A sixth deals with the publication of data about the world's climates and keeps an eye on the study of polar meteorology as it affects the whole world. Agricultural meteorology is under still another commission. Aviation weather problems is followed by another commission, while the tenth commission concerns itself with clouds and other phenomena.

In other words, the International Meteorological Organization is so built that international cooperation on any phase of weather work can be secured promptly.

At the last meeting at Copenhagen, there were ninety meteorologists representing thirty-three national meteorological services. One of the epoch-making things they did was to agree on a common code and a uniform method of reporting the weather throughout the world. That new system starts this coming year.

*****

ANNOUNCEMENT: You have just heard old Ob Server tell about the International Meteorological Organization. This talk is one of a series of Chats by the Weather Man presented by this Station_____ in cooperation with the United States Department of Agriculture every other Friday. This series of observations about the weather will be continued into the New Year.